

ALFALFA CUTTING MANAGEMENT: ANIMAL NUTRITION CONSIDERATIONS

*Robert W. Prange & Sydney J. Lyford, Jr.
Department of Veterinary & Animal Sciences*

Alfalfa can be an excellent source of nutrients when it is incorporated as a forage into the rations of dairy cattle. The crude protein content of alfalfa is two to three times that of corn silage. Corn silage is superior to alfalfa in supplying energy for milk production, but with proper harvesting practices, alfalfa can also supply adequate levels of energy for milk production.

The management factor of primary importance is the stage of plant maturity at time of harvest. Stage of maturity influences the chemical composition and subsequent dry matter intake of alfalfa. As shown in Table 1 the concentration of crude protein and total digestible nutrients decreases as the alfalfa plant increases in maturity from the late vegetative to the mature stage. The decrease in total digestible nutrients reflects a decrease in digestibility of alfalfa as it matures. As alfalfa matures, cell wall content (or crude fiber) increases, resulting in a depressed ability to consume adequate levels of dry matter from alfalfa. Due to the decrease in digestibility (TDN) and the depressed dry matter intake as alfalfa matures, the amount of energy available for productive purposes is substantially lower. Consequently, more grain supplementation will be required to maintain high milk production if alfalfa is not harvested at the proper stage of maturity.

Table 1. Effect of stage of maturity on the nutrient composition of alfalfa hay.

Stage of Maturity	Crude Protein	Total Digestible Nutrients	Cell Walls
	----- % of dry matter -----		
Late vegetative	20	62	44
Mid bloom	16	56	40
Full bloom	15	54	52
Mature	14	52	55

Adapted from NRC, 1978.

Rations using pre-bloom alfalfa, mid-bloom alfalfa, corn silage, or corn silage plus pre-bloom alfalfa as forage sources were balanced for 65 pounds of 4% milk. As shown in Table 2, the pre-bloom alfalfa ration required less grain and protein supplementation when compared to the mid-bloom alfalfa ration. Harvesting alfalfa at the pre-bloom stage of maturity resulted in a daily savings of \$0.28. Mixing pre-bloom alfalfa with corn silage also resulted in a savings of \$0.13 when compared to the high corn silage ration. The combination of corn silage and pre-bloom alfalfa as a forage makes optimum use of the protein from alfalfa and the energy from corn silage. Harvesting your alfalfa at the late vegetative stage of maturity will result in an excellent feedstuff for the high producing dairy cow.

Table 2. Balanced rations for 65 lb of 4% milk with corn silage and alfalfa roughage sources.

Feedstuff	Cost/ ton ¹	Corn Silage	Mid-bloom Alfalfa	Pre-bloom Alfalfa	Mixed Corn Silage & Pre-bloom
	\$	lb feedstuff ¹			
Corn silage ²	27	75.0	-	-	49.0
Alfalfa haylage ³	40	-	40.0	51.0	25.0
Mixed hay	90	3.0	-	-	-
Soybean meal	252	7.7	3.9	1.1	4.8
Corn meal	152	11.5	23.6	21.8	15.0
Dicalcium phosphate	240	0.14	0.04	0.09	0.12
Limestone	30	0.24	0.14	-	0.04
Trace mineral slat	-	0.20	0.20	0.20	0.20
Sulfur source	140	0.02	-	-	0.01
Ration Cost		\$3.04	\$3.11	\$2.83	\$2.91

¹ as fed basis.

² 27% dry matter and priced at \$100/ton dry matter.

³ 40% dry matter and priced at \$100/ton dry matter.